

REMARKS

This Amendment responds to the Office Action dated November 17, 2005 in which the Examiner rejected claims 1-8 and 10-11 under 35 U.S.C. §103 and objected to claim 9 as being dependent upon a rejected base claim but would be allowable if rewritten in independent form.

Claims 1-3, 7-8 and 10 were rejected under 35 U.S.C. § 103 as being unpatentable over *Ikeshoji et al.* (U.S. Patent No. 6,088,479) in view of *Abe et al.* (U.S. Patent No. 5,086,434).

Ikeshoji et al. appears to disclose an image processing method for executing operation steps of repairing a defect of a document and changing a background image in a short time and furthermore executing those operation steps automatically and a recording medium for storing them. (col. 1, lines 34-38) FIG. 1 is an illustration showing a method for separating a character and figure image and a background image included in an original drawing which is a document. In FIG. 1, an original drawing 10 comprises a character and figure image 30 in which a circle and triangle shown by FIG. 32 or optional characters shown by Character 34 are drawn on a background image 20 of a paper or canvas. There exist spots of stains 40 on the background image 20 of the original drawing 10. Firstly, the original drawing 10 is read by a scanner (not shown in the drawing) attached to an image processor which is not shown in the drawing so as to create image data 10D or the image data 10D which is stored in the image file beforehand is read from the image processor and then the process for passing the image data 10D through the

maximum filter 100 is executed. (col. 2, lines 39-55) Namely, the brightness of pixels of the line portion of FIG. 32 on the character and figure image 30 is lower (darker) than the brightness of pixels of the peripheral background portion. When the brightness of pixels with a lower brightness is replaced with the maximum brightness of peripheral pixels, the brightness of pixels of the line portion becomes equal to the peripheral brightness and the lines are eliminated. Therefore, Character 34 and FIG. 32 comprising lines are eliminated. (col. 2, line 61 through col. 13, line 2) Next, the image data 10D processed by the maximum filter 100 is processed by a noise removal filter 110. This noise removal filter 110 has a function for calculating the average of weighing loads of the brightness of an optional pixel and the brightness of a plurality of pixels around it and replacing it with the brightness of the optional pixel. Therefore, the image data 10D passing through the noise removal filter 110 is put into an ambiguous state as a whole and by this process, background image data 20D including the spots of stains 40 is obtained. Furthermore, when a process of subtracting the background image data 20D from the image data 10D by a subtraction process 120 is executed, character and figure image data 30D is obtained. These background image data 20D and the character and figure image data 30D are stored in the image file by the image processor. (col. 3, lines 7-23) FIG. 3 is an illustration for the process of restoring the original drawing by composing the separated background image data and character and figure image data which are shown in FIGS. 1 and 2. The background image data 20D of the background image 20 and the character and figure image data 30D of the original drawing which

is read from the image file obtained by the process shown in FIG. 2 are sent to a composer 300. The composer 300 adds the background image data 20D and the character and figure image data 30D and outputs and stores image data 10D1 in the image file. On a display image 10-1 which is obtained by displaying the image data 10D1 on an image display device (not shown in the drawing), a character and figure image is composed and displayed on a background image on which stains are removed and the initial state of the original drawing when it is produced is restored. According to the embodiment shown in FIG. 3, minute shades of the background image are also removed, so that a flat image as a whole is obtained. (col. 4, lines 1-19)

Thus, *Ikeshoji et al.* merely discloses obtaining and subtracting background image data from an image (col. 3, lines 17-20). Nothing in *Ikeshoji et al.* shows, teaches or suggests extracting areas corresponding to character images as claimed in claims 1 and 7. Rather, *Ikeshoji et al.* merely discloses extracting background image data from the image data.

Additionally, *Ikeshoji et al.* merely discloses that once the background image data is extracted, the remaining data of character and figure image data is stored in an image file (col. 3, lines 21-23). Nothing in *Ikeshoji et al.* shows, teaches or suggests generating character code data based on the extracted character images as claimed in claim 1 or converting character image data to character code data as claimed in claims 2, 3 and 7. Rather, *Ikeshoji et al.* merely discloses storing the remaining image data after the background information is subtracted.

Furthermore, *Ikeshoji et al.* merely discloses a process in which an image is filtered in order to obtain background image data. Nothing in *Ikeshoji et al.* shows,

teaches or suggests a) changing the image data by replacing the extracted areas with the background image as claimed in claim 1, b) complementing the character image data based on the image data around the character image data therein generating changed image data representing an image which is the same as the original image except without the character image data as claimed in claims 2 and 3 or c) a deleter which deletes the character images from the background image therein generating a changed image data representing an image which is the same as the original image except without the character images as claimed in claim 7. Rather, *Ikeshoji et al.* merely discloses removing a background image (i.e. *Ikeshoji et al.* remove the background image from the image data whereas the present invention first extracts character image data and then generates a changed image data by deleting the character image from the background image).

Abe et al. appears to disclose a process and apparatus for transmitting mixed data. (col. 1, line 11) The data is preferably divided into blocks in such a way as to reduce the number of blocks. The amount of data per block may vary. Several modes of data division may be available, a given mode being selected so as to reduce the number of blocks. For example, respective blocks may be formed of character code data, of image data, and of image data overlapping at least partially with character code data. Again, a conversion process (such as data coding) may be employed, and respective blocks may be provided for converted data, and for data that cannot be converted. (col. 1, line 60 through col. 2, line 2) FIG. 3(a) through (c) show a page of mixed data divided into blocks 1-8, corresponding to the display frame of a page on the cathode ray tube 60, to the data of one page at data transmission, or to the print sheet of a page at the printing of received data. (col. 3,

lines 32-36) FIG. 3(c) shows an example of the document of a page after editing, wherein blocks 1 to 6 are character code blocks, and blocks 7, 8 are bit image blocks. Thus there is required a large number of blocks in transmission if character code blocks and bit image blocks are mixed in the document. These blocks can however be converted into two blocks 9, 10 as shown in FIGS. 3(a) and 3(b). FIG. 3(a) shows the code block 9, in which an area corresponding to the block 7 need not be filled with codes since it is positioned at the end of lines, but, in an area corresponding to the block 8, spaces between character codes are filled in with blank codes such as space or tabulator codes. FIG. 3(b) shows the bit image block 10 which is selected as the smallest rectangular block at least including the blocks 7 and 8, but there may be employed any rectangular block without limitation in size. An area corresponding to the character code block shown in FIG. 3(c) is totally filled with white bits. (col. 4, lines 4-23) In the following there will be explained an embodiment provided with a character recognizing function in addition to the above-explained functions. Also in this embodiment the structure is same as that shown in FIG. 1. Data of an original text read by the reader 10 are stored in the image memory 25, then subjected to character recognition by the CPU 27 and a corresponding code is allotted to each recognized character. The character recognition can be conducted by an already known process. In such character recognition of the original, certain characters may remain unrecognizable. There will be required a large number of blocks if such unrecognized characters are transmitted as image data of respective different blocks. In the present embodiment, therefore, the recognized characters are transmitted as a code block as shown in

FIG. 3, while the unrecognized characters are transmitted as a bit image block, and both are overlaid at the receiving side. (col. 7, lines 43-61)

Thus, *Abe et al.* merely discloses subjecting data of an original text to character recognition and transmitting the recognized characters as code blocks while unrecognized characters are transmitted as bit image block (col. 7, lines 46-61). Nothing in *Abe et al.* shows, teaches or suggests a) extracting areas and changing the image data by replacing the extracted areas with background image as claimed in claim 1, b) complementing the character image data based on the image data around the character image data as claimed in claims 2 and 3 or c) a deleter which deletes character images from a background image as claimed in claim 7. Rather, *Abe et al.* merely discloses that recognized characters are transmitted as a code block while unrecognized characters are transmitted as a bit image block.

A combination of *Ikeshoji et al.* and *Abe et al.* would not be possible since *Ikeshoji et al.* is merely directed to an image processing method which separates a background image from character and figure image data while *Abe et al.* is merely directed to transmitting mix data composed of recognized characters as a code block and unrecognized characters as a bit image block. Neither reference suggests any motivation for combining the references. Furthermore, neither *Ikeshoji et al.* or *Abe et al.* show, teach or suggest a) changing the image data by replacing the extracted areas with the background image as claimed in claim 1, b) complementing the character image data based on image data around the character image data as claimed in claims 2 and 3 or c) deleting the character images from the background image as claimed in claim 7. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claims 1-3 and 7 under 35 U.S.C. §103.

Claims 8 and 10 depend from claim 7 and recite additional features.

Applicant respectfully submits that claims 8 and 10 would not have been obvious within the meaning of 35 U.S.C. § 103 over *Ikeshoji et al.* and *Abe et al.* at least for the reasons as set forth above. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claims 8 and 10 under 35 U.S.C. § 103.

Claim 10 was rejected under 35 U.S.C. § 103 as being unpatentable over *Ikeshoji et al.* in view of *Abe et al.*

Claim 10 depends from claim 7 and recites additional features. Applicant respectfully submits that claim 10 would not have been obvious within the meaning of 35 U.S.C. § 103 over *Ikeshoji et al.* in view of *Abe et al.* at least for the reasons as set forth above. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claim 10 under 35 U.S.C. § 103.

Claim 4 was rejected under 35 U.S.C. § 103 as being unpatentable over *Ikeshoji et al.* in view of *Abe et al.* and further in view of *Melen* (U.S. Patent No. 6,151,423).

As discussed above, nothing in *Ikeshoji et al.* or *Abe et al.* shows, teaches or suggests a corrector which changes character image data to the same as a color of an image around the character image with reference to the image data as claimed in claim 4. Rather, *Ikeshoji et al.* merely discloses filtering an image to obtain a background image data while *Abe et al.* merely discloses transmitting recognized characters as a code block and transmitting unrecognized character as a bit image block. Also, as discussed above, neither *Ikeshoji et al.* nor *Abe et al.* discloses any motivation for combining the references.

Melen appears to disclose optical character recognition and more particularly to determining the orientation of a scanned page. (col. 1, lines 7-9) The character recognition module 110 receives the captured image data, segregates the captured image data according to the characters on the page to produce character image data corresponding to each character, identifies the characters corresponding to the character image data, and assigns a character code (according to an encoding system, such as ASCII) to the identified character. (col. 3, lines 36-44) As shown in FIG. 2, a page buffer 230 can store the image data for an entire document and the symbols on the document, such as alphanumeric characters, can be extracted and provided as individual character cells 232 by the pre-processing module 225. The cells can be indexed according to any conventional technique, such as a one-dimensional or two-dimensional array representing their location on the page.

(col. 4, lines 3-10)

Thus, *Melen* merely discloses character cells can be indexed representing their location on a page. Nothing in *Melen* shows, teaches or suggests a corrector which changes the character image data to the same as a color of an image around the character image with reference to the image data as claimed in claim 4. Rather, *Melen* merely discloses indexing character cells.

Since *Ikeshoji et al.* is merely directed to obtaining background image using a filter, *Abe et al.* merely discloses transmitting mix data composed of character code data and bit image data and *Melen* merely discloses indexing cells, nothing in the combination of the references shows, teaches or suggests the primary features as claimed in claim 4. Furthermore, applicant respectfully submits that nothing in the references shows, teaches or suggests any teaching to modify the prior art to arrive

at the claimed invention. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claim 4 under 35 U.S.C. §103.

Claim 5 was rejected under 35 U.S.C. § 103 as being unpatentable under *Ikeshoji et al.*, *Abe et al.* and *Melen* and further in view of *Abe et al.* (U.S. Patent No. 6,289,121). Claim 6 was rejected under 35 U.S.C. § 103 as being unpatentable over *Ikeshoji et al.*, *Abe et al.*, and *Melen* and further in view of *Koakutsu et al.* (U.S. Patent No. 6,285,459). Claim 11 was rejected under 35 U.S.C. § 103 as being unpatentable over *Ikeshoji et al.* and *Abe et al.* and further in view of *Johnson* (U.S. Patent No. 5,212,739).

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. § 103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicant respectfully requests the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since the combination of the primary references does not show, teach or suggest the primary features as claimed in claims 1-4 and 7, Applicant respectfully submits that the combination of the primary references with the secondary references will not overcome the deficiencies of the primary references. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claims 5, 6 and 11 under 35 U.S.C. § 103.

Since objected to claim 9 depends from allowable claims, Applicant respectfully requests the Examiner withdraws the objection thereto.

New claims 12-17 have been added. Applicant respectfully requests the Examiner allows new claims 12-17.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

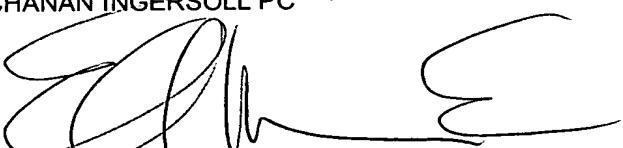
In the event that this paper is not timely filed within the currently set shortened statutory period, Applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

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